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## Comparison of the Attitude towards Organ Donation among Nursing and Engineering Students in Selected Colleges of Nagpur

Lekshmi M.

Lecturer, Department of Community Health Nursing, Asharam College of Nursing, Nagpur, Maharashtra 441002, India.

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### Abstract

The present descriptive comparative study aims to compare the attitude towards organ donation among nursing and engineering students. Likert scale was prepared as tool for the study. The researcher met the students in two colleges and samples were selected by using convenience sampling method. Totally one hundred (100) students including 50 nursing and 50 engineering students were selected. On the day of data collection, each student was asked to respond to attitude scale. The statistical Student's unpaired t test implied that the difference in attitude score of nursing and engineering students was found to be 5.62 which is statistically significant at 0.05% level. It was inferred that there was significant difference in the attitude towards organ donation among the nursing students and engineering students. It was also found that there was significant association between attitude towards organ donation of nursing students and their gender ("t" value =2.48, p<0.05).

**Keywords:** Nursing; Engineering; Attitude; Students; Organ donation.

### Introduction

Organ donation is the process of surgically removing an organ or tissue from one person (donor) and placing it into another person (recipient). Of the overall deaths occurring annually in India, nearly one lakh deaths occur due to organ failure. The transfer (engraftment) of human cells, tissues or organs from a donor to a recipient with the aim of restoring functions in the body is transplantation. Globally, there is an acute shortage of organs for transplantation.

Of the 85,000 liver failure patients who join the country's waitlist annually, less than 3% get an organ. Also, of the two lakh fresh annual registrations for kidneys, 8000 manage a transplant. Thousands are waiting for heart or lungs and barely 1% get an organ before time runs out. Despite cadaveric organ donations witnessing a near fourfold increase in the recent years, the demand-supply disparity in the country remain grave. Over 2.5 lakh deaths in India are attributed to organ failure annually, while cadaver donations are still very few in comparison. There were 3079 cadaver organ transplantation and 9936 live organ transplantation in India in 2016, there were 110 cadaver donation in Maharashtra.

For many of the end-stage organ diseases, organ transplantation is the most preferred treatment. The need for the organ transplantation is higher than the availability. For the transplantation program to

**Corresponding Author:** Lekshmi M., Lecturer, Department Of Community Health Nursing, Asharam College Of Nursing, Nagpur, Maharashtra 441002, India.

**E-mail:** lekshmi.m4@gmail.com

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be successful, awareness regarding organ donation is needed and people must have a positive attitude toward donating organs. Shortage of donor organs can be resolved by raising awareness and educating the youth about various aspects of organ donation since they comprise of the majority of the population.

Organ donation is yet to gain momentum in India. The knowledge and attitude of a society toward organ transplantation is far from satisfactory even among the educated sections of the society. The major concerns causing organ shortage in the country are lack of awareness and correct knowledge among public, myths and misconception clouding organ donation due to religious and cultural barriers. Hence, imparting correct knowledge and attitude about the issue to the public is essential for the success of organ donation program in India.

#### *Problem Statement*

A study to compare the attitude towards organ donation among nursing students and engineering students in selected colleges of Nagpur, Maharashtra

#### *Objectives of the Study*

1. To assess the attitude towards organ donation among nursing students.
2. To assess the attitude towards organ donation among engineering students.
3. To compare the attitude towards organ donation among nursing and engineering students.
4. To find the association between attitude towards organ donation among nursing students and selected demographic variables.
5. To find the association between attitude towards organ donation among engineering students and selected demographic variables.

### **Method**

*Research Design:* Descriptive comparative design was used for the study.

*Setting:* Asharam College of Nursing, Kamptee and ITM College of Engineering, Kamptee were the setting for the study.

*Sample and Sample Size:* The sample for the study consisted of 50 engineering students and 50 Basic BSc nursing students.

*Data Collection Technique and Instrument:* Likert scale was prepared as tool for the study. The tool had two parts.

Part 1: Data on demographic factors: It consisted of 5 items. It included personal and demographic data such as age, gender, religion, place of residence and mode of accommodation.

Part 2: Data on attitude: It consisted of 21 items. Likert scale was prepared to identify the attitude of students towards organ donation. It consisted of statements that students say or feel about organ donation. The scoring for the response was "1" for "strongly disagree", "2" for "disagree", "3" for "uncertain" and "4" for "agree" and "5" for "strongly agree" for statements supporting organ donation and vice versa for statements which were not supporting organ donation.

The respondents were asked to indicate the degree to which they agree or disagree with the opinion expressed by the statement. The total score was "105". The score "21–49" indicated Negative Attitude, "50–77" indicated Neutral Attitude and a score of "78–105" indicated Positive Attitude.

#### *Content Validity*

The prepared tool with the problem statement, objectives and criterion checklist was given to experts from the field of nursing to ensure content validity. They were requested to give their opinion and suggestions regarding the items in the tool. The necessary modification was made according to the suggestions.

#### *Reliability of the Tool*

Pearson's Correlation Coefficient	0.806
Reliability	89.25%

By using Parallel form method, the reliability of the tool was 89.25% and hence the tool was reliable.

#### *Procedure for Data Collection*

Formal prior permission was obtained from the authority of colleges to conduct the study as per the convenience of the researcher. The researcher met the students in two colleges and samples were selected by using convenience sampling method among those who fulfilled the sample selection criteria. Totally one hundred (100) students including 50 engineering students and 50 nursing students from two colleges were selected. After selection, rapport was established and the subjects were explained about the purpose and usefulness

of the study and gave assurance about the confidentiality of their responses. An informed consent was also obtained from the subjects indicating their willingness to participate in the study. The researcher collected the necessary data during the month of March 2018. Confidentiality was ensured. On the days of data collection, each student was given tool to respond to Likert scale. Data collection process was terminated after thanking each respondent for their participation and co-operation.

### Result

The analysis was done with the help of inferential and descriptive statistics. The analysis and interpretation of the observations are given in the following four sections.

#### Section A: Distribution of Nursing and Engineering Students According to Demographic Variables.

**Table 1:** Percentagewise distribution of nursing and engineering students according to their demographic characteristics.

Demographic Variables	No of engineering students	No of nursing students
n=50		
Age in years		
17 years	0 (0%)	0 (0%)
18 years	2 (4%)	16 (32%)
19 years	11 (22%)	28 (56%)
20 yrs and more	37 (74%)	6 (12%)
Gender		
Male	26 (52%)	11 (22%)
Female	24 (48%)	39 (78%)
Transgender	0 (0%)	0 (0%)
Religion		
Hindu	39 (78%)	41 (82%)
Christian	0 (0%)	0 (0%)
Muslim	6 (12%)	1 (2%)

Others	5 (10%)	8 (16%)
Place of residence		
Rural	26 (52%)	9 (18%)
Semi Urban	15 (30%)	13 (26%)
Urban	9 (18%)	28 (56%)
Mode of accommodation		
Home	37 (74%)	25 (50%)
Hostel	4 (8%)	7 (14%)
Individual rented room	7 (14%)	18 (36%)
Paying Guest	2 (4%)	0 (0%)

The table 1 depicts frequency and percentage wise distribution of nursing and engineering students according to their age, gender, religion, place of residence and mode of accommodation.

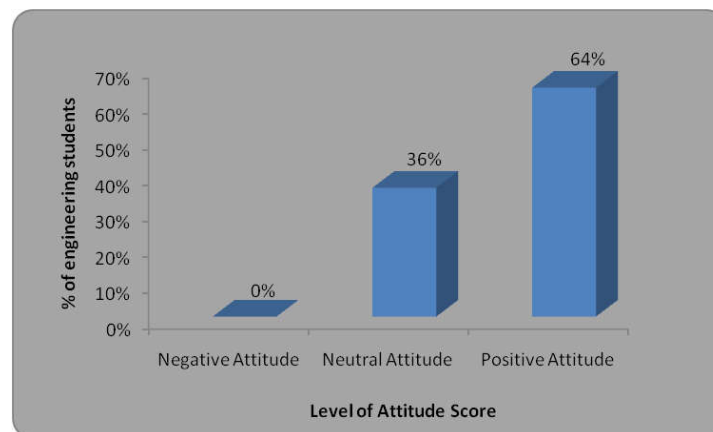
#### Section B: Assessment of Attitude towards Organ Donation among Engineering and Nursing Students

**Table 2:** Distribution of engineering students with regards to attitude towards organ donation

n=50

Level of attitude score	Score Range	No of engineering students	Attitude Score Percentage
Negative Attitude	21-49	0	0
Neutral Attitude	50-77	18	36%
Positive Attitude	78-105	32	64%
Mean ± SD		81.12 ± 8.90	
Mean %		77.25 ± 8.48	
Range		63 to 105	

The table 2 showed the frequency and percentagewise distribution of engineering students according to attitude towards organ donation. It showed that 36% of the engineering students had neutral attitude and 64% had positive attitude towards organ donation. Mean attitude score of the engineering students was 81.12 ± 8.90 and range of attitude score was 63 to 105.



**Graph 1:** Distribution of engineering students with regards to attitude towards organ donation

**Table 3:** Distribution of nursing students with regards to attitude towards organ donation

n=50

Level of attitude score	Score Range	Attitude Score	
		No of nursing students	Percentage
Negative Attitude	21-49	0	0
Neutral Attitude	50-77	2	4%
Positive Attitude	78-105	48	96%
Mean $\pm$ SD		90.10 $\pm$ 6.94	
Mean %		85.90 $\pm$ 6.61	
Range		73 to 104	

The above table 3 showed the frequency and percentage wise distribution of nursing students according to attitude towards organ donation. It showed that 4% of the nursing students had neutral attitude and 96% had positive attitude towards organ donation. Mean attitude score of the nursing students was  $90.10 \pm 6.94$  and range of attitude score was 73 to 104.

### Section C: Comparison of Attitude towards Organ Donation among Engineering Students and Nursing Students

Table 4 depict the overall mean attitude scores of engineering and nursing students which reveals that mean attitude score of nursing students was higher 90.10 with SD of  $\pm 6.94$  when compared with attitude score of engineering students which was 81.12 with SD of  $\pm 8.90$ .

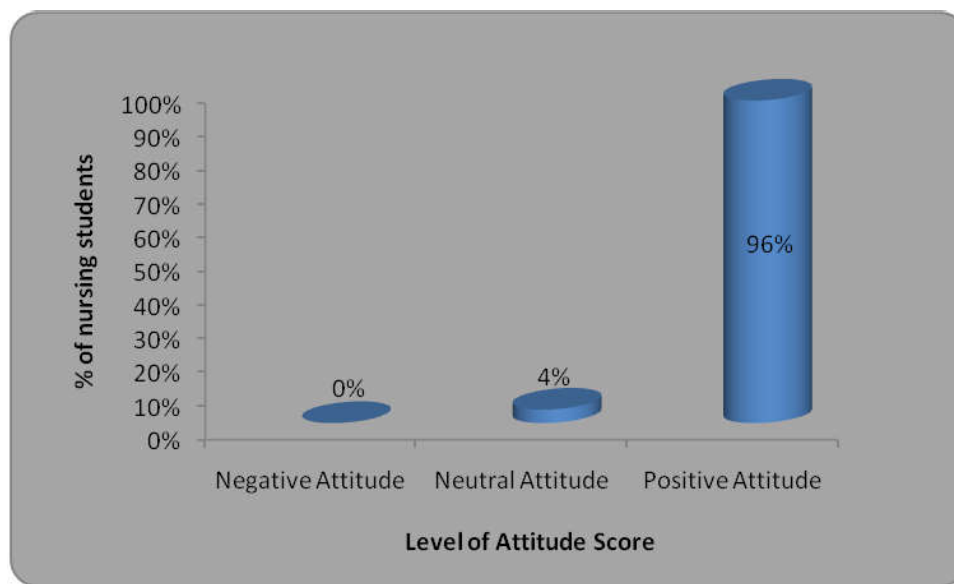
The statistical Student's unpaired t test implied that the difference in attitude score of nursing students and engineering students was found to be 5.62 which is statistically significant at 0.05% level. Hence it was statistically interpreted that comparison of attitude score among nursing and engineering students was statistically significant. It was inferred that there was significant difference in the attitude towards organ donation among nursing students and engineering students. Further it was observed that attitude of nursing students was more favorable than attitude of engineering students towards organ donation.

**Table 4:** Overall mean, standard deviation and t value of attitude score among engineering and nursing students towards organ donation

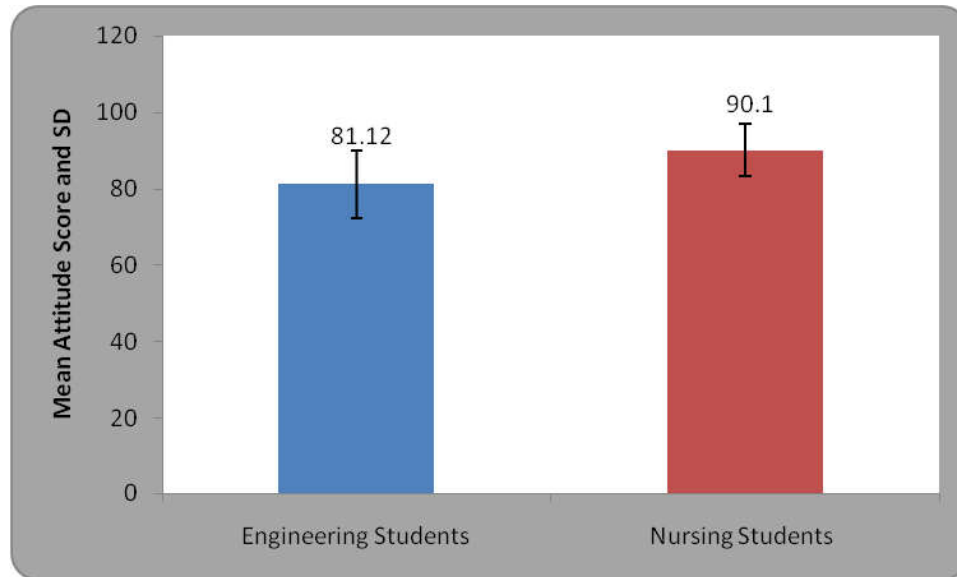
n=50

Group	Mean	SD	Mean Percentage	t-value	p-value
Engineering Students	81.12	8.90	77.25	5.62	0.0001
Nursing Students	90.10	6.94	85.80		S, p <0.05

\*S- Significant

**Graph 2:** Distribution of nursing students with regards to attitude towards organ donation





Graph 3: Comparison between mean attitude score among engineering and nursing students

Table 5: Association of attitude score regarding organ donation in relation to gender among nursing students  
n=50

Gender	No. of nursing students	Mean attitude score	t-value	p-value
Male	11 (22%)	85.72 ± 6.49	2.48	0.016
Female	39 (78%)	91.33 ± 6.62		S, p<0.05
Transgender	0 (0%)	0 ± 0		

#### Section D: Association of Attitude towards Organ Donation among Engineering Students With Selected Demographic Variables.

The table 5 showed the association of attitude scores with gender of nursing students. The tabulated 't' value was 2.00 (df=48) which was much less than the calculated 't' i.e. 2.48 at 5% level of significance. Also the calculated 'p'=0.016 was much less than the acceptable level of significance i.e. 'p'=0.05. Hence it was interpreted that gender of nursing students was statistically associated with their attitude score.

#### Discussion

The present study was aimed to compare the attitude towards organ donation among nursing students and engineering students in selected colleges of Nagpur, Maharashtra. Result showed that 4% of the nursing students had neutral attitude and 96% had positive attitude towards organ donation. A cross-sectional descriptive study carried out among conveniently selected undergraduate nursing students (n = 271) at a College of Nursing, Bengaluru, South India revealed similar results

that 72.3% (majority) hold positive attitudes (mean ± SD, 83.9 ± 1.01) toward organ donation [5].

Result also showed that 36% of the engineering students had neutral attitude and 64% had positive attitude towards organ donation. A cross-sectional study conducted among 486 undergraduate students belonging to medical, dental, engineering, and arts and science from various colleges in Thiruvallur and Chennai revealed that Three hundred and eight (63.4%) wanted to be a part of any organ donation group and also motivate others for organ donation [6].

The statistical Student's unpaired t test implied that the difference in attitude score of nursing students and engineering students was found to be 5.62 which was statistically significant at 0.05% level. It was inferred that there was significant difference in the attitude towards organ donation among nursing students and engineering students. Further it was observed that attitude of nursing students was more favorable than attitude of engineering students towards organ donation. The attitude of nursing students was more compared to that of the engineering students may be because they are related to medical field. So intensive educational programmes and clearance of misconception

among college students other than medical field may inculcate the positive attitude towards organ donation.

A study aimed to assess the knowledge and attitude of medical students regarding organ donation at Government Medical College, Trivandrum, Kerala, India revealed that a majority of the students had adequate knowledge regarding organ donation, but it is not translated into their willingness for donation – both cadaveric and live. The study reiterates the need for innovative educational interventions for students.

#### *Implications*

*Nursing Practice:* Nursing personnel, especially community health nurses have the responsibility to know the attitude on organ donation among public and plan awareness and motivating programmes regarding organ donation according to that data. It will be helping to inspire public for organ donation and meet the urgent needs of the people waiting for transplantation.

*Nursing Education:* Integration of theory and practice is essential in nursing profession. So the nurse educator can use the result of the study as data for the students. Findings of the study would help nurse educators to plan and organize continuing education to the students for applying and updating the knowledge of organ donation.

*Nursing Administration:* Community health nursing administrators can plan special awareness programmes for students regarding organ donation. The administrators can also serve as a resource person for other nurses, students, clients and relatives.

*Nursing research:* Research should be continued on awareness of and attitude towards organ donation by different category of people. Finding of the study showed that the area needs further exploration. The study findings would help to expand the scientific body of knowledge upon which further researches can be conducted.

#### *Recommendation*

- A similar study can be replicated on a larger population.
- A similar study can be replicated on different categories of population
- A study can be conducted to assess the knowledge, attitude and practice of students in relation to organ donation.
- A study can be conducted to evaluate the effectiveness of planned teaching versus information booklet on students in relation to organ donation.
- A comparative study can be conducted between rural and urban residents on awareness and attitude towards organ donation.

#### **Conclusion**

A well-organized approach and awareness programmes are required to raise awareness and positive attitude among the youth about various aspects of organ donation which is necessary to eliminate the factors that affect the rate of availability of donor organs. Awareness and elimination of misconceptions through innovative educational methods and motivational sessions in educational institutions are some of the means of intervention to bring about changes regarding attitude towards organ donation among the students.

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## Assess the Myths, Beliefs and Perceptions about Mental Disorders among Paramedical Students

Aspin R.

Associate Professor, Mental health Nursing Department, SCPM College of Nursing and Paramedical Sciences, Haripur, Gonda, Uttar Pradesh 271125, India.

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### Abstract

*Background of the study:* A mental disorder, also called a mental illness or psychiatric disorder, is a behavioral or mental pattern that causes significant distress or impairment of personal functioning. Such features may be persistent, relapsing and remitting, or occur as a single episode. Many disorders have been described, with signs and symptoms that vary widely between specific disorders. Such disorders may be diagnosed by a mental health professional. Mental and behavioral disorders are present at any point in time in about 10% of the adult population worldwide. The burden of mental disorders is maximal in young adults, the most productive section of the population. Neuropsychiatry conditions together account for 10.96% of the global burden of disease as measured by disability-adjusted life years (DALYs). Projections estimate that by the year 2020, neuropsychiatric conditions will account for 15% of disabilities worldwide, with unipolar depression alone accounting for 5.7% of DALYs and will stand second in top 10 leading causes of disability. Families also incur social costs, such as the emotional burden of looking after disabled family members, diminished quality of life for careers, social exclusion, stigmatization, and loss of future opportunities for self-improvement. This burden emphasizes the need of scientific studies in various aspects of mental disorders. *Objective of the study:* To assess the myths, beliefs and perceptions about mental disorders among paramedical students. To develop an information booklet on mental disorder. To associate the values of myths, beliefs and perceptions about mental disorder with the paramedical students' demographic variables. *Methods:* The study involved quantitative approach and non-experimental descriptive design with non-probability convenient sampling technique. To collect the data from respondents, questionnaire on myths, beliefs and perception was administered to 50 paramedical students following inclusion and exclusion criteria. The tool consisted 30 items. The results were described by using descriptive and inferential statistics. *Result:* Maximum 44% of the paramedical students had moderate satisfaction level of myths, beliefs and perceptions about mental disorders, 38% were having unsatisfactory level and 18% were satisfactory level on myths, beliefs and perceptions about mental disorders. There is a significant association between myths, beliefs and perceptions scores and age, religion and family members mental disorder, as the chi-square value are higher than the tabulated value. Therefore, the H1 is accepted and the null hypothesis is rejected.

**Keywords:** Myths; Believes; Perceptions; Mental disorder and paramedical students.

**Corresponding Author: Aspin R.**, Associate Professor, Mental health Nursing Department, SCPM College of Nursing and Paramedical Sciences, Haripur, Gonda, Uttar Pradesh 271125, India.

**E-mail:** [aspin4al@gmail.com](mailto:aspin4al@gmail.com)

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## Introduction

Mental illnesses are widespread around the world and affect more than 25 percent of all people at some point in their lives. About 20 percent of patients that seek first-step health services have one or more mental illness. Peoples from various segments of society are believed to meet the condition of being educated and are seen to bear traces of the beliefs about mental illness from their expanding environment [1]. Myth is a folklore genre consisting of narratives that play a fundamental role in society, such as foundational tales. The main characters in myths are usually gods and on the mental problems [2].

Perception is the organization, identification, and interpretation of sensory information in order to represent and understand the mental disorders persists in the society [3]. Mental health issues are expanding and are disturbing in pretty much all aspects of the world, and thus ordering this review gives a chance to comprehend the distinctive perspectives viewing regarding mental disorders and problems [4]. Students need to learn about mental disorder. Students are the future of our country and they are going to teach others, therefore there is a need to assess the students' level of understanding on mental disorders.

One of the perceived causes of mental problems are the low level of mental health literacy [5]. According to Jorm et al. introduced the term 'mental health literacy' and have defined it as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention". Mental health literacy consists of several components, including: (a) the ability to recognize specific disorders or different types of psychological distress; (b) knowledge and beliefs about risk factors and causes; (c) knowledge and beliefs about self-help interventions; (d) knowledge and beliefs about professional help available; (e) attitudes which facilitate recognition and appropriate help-seeking; and (f) knowledge of how to seek mental health information [6].

## Problem Statement

"A study to assess the myths, beliefs and perceptions about mental disorders among paramedical students in selected colleges at Gonda district, Uttar Pradesh"

## Objectives of the study

1. To assess the myths, beliefs and perceptions about mental disorders among paramedical students.
2. To associate the values of myths, beliefs and perceptions about mental disorder with the paramedical students' demographic variables.

### *Hypothesis*

$H_1$ - There is a significant association between the values of myths, beliefs and perceptions about mental disorder with the paramedical students' demographic variables.

### *Assumptions*

The information booklet helps the paramedical students to get knowledge on mental disorders.

### *Delimitations*

The study will be limited to 50 paramedical students from SCPM college of nursing and paramedical sciences, Gonda.

### *Methodology*

The conceptual frame work of the present study was developed using the concepts from ground general system's theory (Von Ludwing Bertalamffy 1956). A descriptive study was used to find the myths, beliefs and perceptions about mental disorder. The present study was conducted in SCPM College of Nursing and Paramedical sciences at Gonda. 50 paramedical students were selected for this study. Non-probability convenient sampling was used. The inclusion criteria are students who are willing to participate. Students who are able to write and read English. Both male and female students are included. Exclusion criteria are those who were not willing to participate and students who are sick. Socio Demographic data and questionnaire on myths, beliefs and perception was used to collect the data. The final format of the structured questionnaire comprises of two parts. Part I consists of items describing the demographic variables of the sample like age, gender, family, income, religion and mental disorder in family members. Part II consists of 30 items in 5-point scale starts from 0 to 4. Minimum 0 and maximum 120 marks. The pilot study was conducted on 6 samples. The

reliability of the tool was computed by using split half technique. The reliability co-efficient found to be 0.82 and validity coefficient worked out to be 0.97 revealing that the tool is feasible for conducting the main study. The respondents were assured that the confidentiality of the information provided by them. It took 2 minutes for introduction and rapport building and 15 minutes for filling the questions. Data was collected during the college days. The data collection procedure was done.  $\chi^2$  test was used to determine the significance of relationship of myths, believes and perceptions about mental disorder with demographic variables.

## Results

**Table 1:** Frequency and percentage distribution of socio demographic variables.

n=50

S. No	Socio Demographic Variables	Frequency	Percentage
1	<i>Gender</i>		
a.	Male	36	72
b.	Female	14	28
2	<i>Age in years</i>		
a.	17-22	27	54
b.	23-28	12	24
c.	>28	11	22
3	<i>Type of family</i>		
a.	Nuclear family	16	32
b.	Joint family	34	68
4	<i>Family income per month in Rupees</i>		
a.	Below 10000	11	22
b.	10000 to 20000	23	46
c.	Above 20000	16	32
5	<i>Religion</i>		
a.	Hindu	29	58
b.	Muslim	11	22
c.	Christian	5	10
d.	Other religion	5	10
6	<i>Mental disorders in family</i>		
a.	Yes	13	26
b.	No	37	74

The table 1 shows that the maximum 36 (72.0%) paramedical students are males and the remaining 14 (28.0%) are females. Maximum 27 (54.0%) paramedical students age is between 17-22 years, 12 (24.0%) of them between 23-28 years and 11 (22.0%) of them above 28 years. Maximum 34 (68.0%) samples belongs to Joint family and the remaining 16 (32.0%) from nuclear family. Maximum 23 (46.0%) students family income per month was Rs. 10000 to 20000, 16 (32.0%) of them having above 20000 rupees and the remaining 11 (22.0%) of them having below 10000 rupees per month family income. Maximum 29 (58.0%) samples are Hindus, 11 (22.0%) of them are Muslims and 5 (10.0%) of them are Christians and the remaining 5 (10.0%) of them following other religion. Maximum 41 (82.0%) students family members had no mental disorder and the other 9 (18.0%) samples faced the mental disorder in their family members.

**Table 2:** Level of Myths, Beliefs and Perceptions

Level	Frequency	Percentage
Unsatisfactory	19	38%
Moderate satisfactory	22	44%
Satisfactory	9	18%
Total	50	100

Maximum 44% of the paramedical students had moderate satisfaction level of myths, beliefs and perceptions about mental disorders, 38% were having unsatisfactory level and 18% were satisfactory level on myths, beliefs and perceptions about mental disorders (Table 2).

The myths, beliefs and perceptions scores of paramedical students in selected colleges at Gonda district had obtained highest score in the aspect of "Myths on Mental Disorders" with range of 0-36, mean 19.72 and standard deviation 11.16 with mean percentage 49.30. "Belief on Mental Disorders" with range of 0-40 mean 19.22 and standard deviation 10.42 with mean percentage 48.05. "Perceptions on Mental Disorder" with range of 0-32 mean 19.32 and standard deviation 9.53 with mean percentage 48.30 (Table 3).

**Table 3:** Area wise Min, Max, Range, Mean Percentage and Standard Deviation

n=50

S. No	Attitude Level	Statement	Minimum	Maximum	Range	Mean	S.D.	Mean %
1	Myths on Mental Disorders	10	0	40	0-36	19.72	11.156	49.3
2	Belief on Mental Disorders	10	0	40	0-40	19.22	10.420	48.1
3	Perceptions on Mental Disorder	10	0	40	0-32	19.32	9.533	48.3
	Overall	30	0	120	1-101	58.26	29.901	48.6

**Table 4:** Association between Socio Demographic Values with Level of Myths, Beliefs and Perceptions.

Demographic variables	Level		N	df	X <sup>2</sup>	P-value	P<0.05
	Below Mean	Above Mean					
1 Gender							
a Male	15	21	36	1	0.73	3.84	NS
b Female	4	10	14				
2 Age in years							
a 17-22	12	15	27	2	6.24	5.99	S
b 23-28	1	11	12				
c >28	6	5	11				
3 Type of family							
a Nuclear family	6	10	16	1	0.00	3.84	NS
b Joint family	13	21	34				
4 Family income per month							
a Below 10000	5	6	11	2	3.72	5.99	NS
b 10000 to 20000	11	12	23				
c Above 20000	3	13	16				
5 Religion							
a Hindu	16	13	29	3	8.91	7.82	S
b Muslim	1	10	11				
c Christian	1	4	5				
d Other religion	1	4	5				
6 Mental disorder in family							
a Yes	8	5	13	1	4.13	3.84	S
b No	11	26	37				

S=Significant; NS=Nonsignificant

There is no significant association between myths, beliefs and perceptions scores and gender variable, as the chi-square value 0.73 is lower than the tabulated value 3.84. Therefore, the  $H_1$  is rejected. There is a significant association between myths, beliefs and perceptions scores and age in years, as the chi-square value 6.24 is higher than the tabulated value 5.99. Therefore, the  $H_1$  is accepted. There is no significant association between myths, beliefs and perceptions scores and the type of family variable, as the chi-square value 0.00 is lower than the tabulated value 3.84.

Therefore, the  $H_1$  is rejected. There is a significant association between myths, beliefs and perceptions scores and family income per month variable, as the chi-square value 3.72 is lower than the tabulated value 5.99. Therefore, the  $H_1$  is rejected. There is a significant association between myths, beliefs and perceptions scores and religion, as the chi-square value is 8.91 is higher than the tabulated value 7.82. Therefore, the  $H_1$  is accepted. There is a significant association between myths, beliefs and perceptions scores and mental disorder in family, as the chi-square value 4.13 is higher than the tabulated value 3.84. Therefore, the  $H_1$  is accepted.

## Discussion

### *Major findings were*

Maximum 36 (72.0%) paramedical students are males and the remaining 14 (28.0%) are females. Maximum 27 (54.0%) paramedical students age is between 17-22 years, 12 (24.0%) of them between 23-28 years and 11 (22.0%) of them above 28 years. Maximum 34 (68.0%) samples belongs to Joint family and the remaining 16 (32.0%) from nuclear family. Maximum 23 (46.0%) students family income per month was Rs.10000 to 20000, 16 (32.0%) of them having above 20000 rupees and the remaining 11 (22.0%) of them having below 10000 rupees per month family income. Maximum 29 (58.0%) samples are Hindus, 11 (22.0%) of them are Muslims and 5 (10.0%) of them are Christians and the remaining 5 (10.0%) of them following other religion. Maximum 41 (82.0%) students family members had no mental disorder and the other 9 (18.0%) samples faced the mental disorder in their family members.

Maximum 44% of the paramedical students had moderate satisfaction level of myths, beliefs and perceptions about mental disorders, 38%

were having unsatisfactory level and 18% were satisfactory level on myths, beliefs and perceptions about mental disorders.

There is a significant association between myths, beliefs and perceptions scores and age, religion and family members mental disorder, as the chi-square value are higher than the tabulated value. Therefore, the  $H_1$  is accepted and the null hypothesis is rejected.

A supportive study was found. This study was carried out to assess the myths, beliefs and perceptions about mental disorders and health-seeking behavior in general population and medical professionals of India. This study says that the 7.9% professionals believed that mental illnesses are untreatable and 17.6% professionals did not know that psychiatry is a branch of medicine, 11.8% of medical professionals believed that the fasting or a faith healer can cure the mental disorder [7]. It is similar to the current study that the paramedical students also not known very well about mental disorder.

*Ethical Consideration:* Written permission was taken from higher authority of SCPM college of nursing and paramedical sciences, Gonda. Written Informed consent was taken from each study sample.

## Conclusion

It can be concluded from this study that the myths, beliefs and perceptions are significantly more prevalent among medical professionals, and the people need to be communicated to change their behavior and develop a positive attitude toward mental disorders so that health-seeking behavior can improve.

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I **Dinesh Kashyap**, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-  
**(Asharfi Lal)**



## An Exploratory Study to Assess the Causes and Risk Factors of Cerebro Vascular Accident among Patients with Cerebro Vascular Accident at Erode Trust Hospital in Erode

M. Sudhadevi<sup>1</sup>, Dhanalakshmi<sup>2</sup>

<sup>1</sup>Professor, <sup>2</sup>B.Sc(N) Student, Vellalar College of Nursing, Maruthi Nagar, Villarasampatti Village, Thindal Post, Erode, Tamil Nadu 638012, India

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### Abstract

An exploratory study has been conducted to assess the causes and risk factors of cerebrovascular accidents. The study conducted at Erode Trust hospital, Erode. Totally we selected 60 patients by non probability purposive sampling technique and data has collected through the check list on causes and risk factors of cerebrovascular accidents. As per the study findings, the positive causes and risk factors of cerebrovascular accident are, aged above 55 years (78.3%), hypertension patients (65%), stress about (58.3%), menopause attained about (100%) found to be significant association between causes and risk factors and selected demographic variables such as religion, marital status and socio economic status.

**Keywords:** Causes; Risk Factors; Cerebrovascular Accident; Hypertension; Stress; and Menopause.

### Introduction

Cerebrovascular accident or stroke is the second foremost cause of death and third foremost cause of disability around the world. In India, the roughly adjusted prevalence rate of stroke range is about 84-262/100,000 in rural and 334-424/100,000 in urban zones. The incidence rate is 119-145/100,000 based on the recent populace based studies. There is likewise a wide variation in case fatality rates with the highest being 42% in Kolkata.

**Corresponding Author:** M. Sudhadevi, Professor, Vellalar College of Nursing, Maruthi Nagar, Villarasampatti village, Thindal Post, Erode, Tamil Nadu 638012, India

**E-mail:** danramsudha@gmail.com

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A stroke is caused by the Interruption of blood supply to the brain because of a rupture of blood vessels in the brain or blocked by an emboli or thrombus. Stroke is associated with several risk factors that are closely interwoven. However, lifestyle factors have profound effects on its incidence. According to Sridharan SE, et al. (2009), it has been evaluated that hypertension causes 54% of stroke in low-income and middle-income countries, followed by hypercholesterolemia (15%) and tobacco smoking (12%). In the Mumbai registry, 82.8% of patients had hypertension. Nonetheless, evident information for other risk factors was not available. In the Trivandrum registry, nearly 85% had hypertension, 50% had diabetes mellitus, 26% of them had dyslipidemia and 26.8% of men smoked tobacco. In comparison with urban males, more rural males smoked tobacco (22.8% vs. 39.3%,  $p=0.013$ ). Through this survey, it was found that

only one risk factor was present in 38.4% patients, two in 42.0%, and three or more in 14.4% patients.

Because of the significant role of the nervous system in the human life, the various causes and risk factors for stroke existed among all adult population. Hence, the study has been carried out for the control of further disabilities and deaths by stroke among the affected population.

### Statement of the Problem

An exploratory study to assess the causes and risk factors of cerebrovascular accident among patients with cerebrovascular accident in Erode Trust Hospital, Erode.

### Objectives

- To assess the causes and risk factors of cerebrovascular accident among patients with cerebro vascular accident.
- To find the association between causes and risk factors of cerebrovascular accident and demographic variables such as age, sex, marital status, education, occupation, religion, type of family, socio economic status and previous source of information.

### Research Methodology

The research design used for this study was non experimental exploratory design. The study has been conducted in Erode Trust Hospital, Erode. 60 patients diagnosed with cerebro vascular accident who were admitted and attended outpatient department have included as participants by non probability purposive sampling technique. Before initiating the study, the investigator obtained formal permission letter to conduct the study from the authorities of Erode Trust Hospital. After obtaining permission, the data were collected from the patients with cerebrovascular accident who were attending to Erode Trust Hospital.

The investigator initially established rapport with study participants and the nature of the study has been explained to each of them. Obtained informed consent from each participants before collecting a data. Checklist was administered to each samples separately and collected data. The data were analysed by descriptive statistics (mean-frequency, percentage) and inferential statistics (chi-square test).

## Result and Discussion

The aim of the study was to assess the causes and risk factors of cerebro vascular accident among the patients with cerebrovascular accident. As per the study findings, the higher percentage of risk factors (the patients who have matched with 6–10 risk factors) are aged above 55 years (76.3%), family history (5%), dietary habits especially fat rich diet (8.3%) and low fibre diet (1.6%), smoking habit (30%), low physical activity (46.6%), obesity (6.6%), hypertension (65%), diabetes mellitus (36.6%), high blood cholesterol (6.6%), stress (58.3%), substance abuse (38.3%), heart disease (5%), obstructive sleep apnea (5%) and women attained menopause (100%). In the risk assessment, the investigator found that 78.3% of the participants have exposed to 1-5 factors and 21.7% of them have exposed to 6 – 10 risk factors. In further, there was an association between the risk factors for cerebro vascular accident and demographic variables such as religion, marital status and socioeconomic status (Significant at  $p < 0.05$  level). Hence, there is an urge to have every nurses to be knowledgeable with causes and risk factors of cerebro vascular accident and enhance the right population to follow the measures to prevent stroke thereby we can reduce the incidence rate.

**Table 1:** Causes and Risk factor assessment for cerebro vascular accident

S. No	Check List	Number	Percentage (%) n=60
1	<i>Age</i>		
	a. >55 years	47	78.3%
	b. <55 years	13	21.6%
2	<i>Family history</i>		
	a. Yes	3	5%
	b. No	57	95%
	If yes,		
	a. I generation	3	100%
	b. II generation	0	-
3	<i>Dietary Habit</i>		
	a. fat rich diet	5	8.3%
	b. low fibre diet	1	1.6%
	c. optimal diet	54	90%
4	<i>Smoking</i>		
	a. Yes	18	30%
	b. No	42	70%
	If yes,		
	a. quitte	10	55.5%
	b. continuous	6	33.3%
	c. some times	0	0%
	d. frequently	2	11.1%
5	<i>Low physical activity</i>		
	a. Yes	28	46.6%
	b. No	32	53.3%
	If yes,		
	A. No work	4	14.28%
	B. Moderate	24	85.7%

6	<i>Obesity</i>			11	<i>Substance abuse</i>		
	a. Yes	4	6.6%		a. Yes	23	38.3%
	b. No	56	93.3%		b. No	37	61.6%
	If yes,				If yes,		
	A. Obesity	4	100%		A. Alcohol	15	65.2%
	B. Abdominal obesity	0	0%		B. Tobacco	7	36.4%
7	<i>Hypertension</i>				C. Cocaine	0	-
	a. Yes	39	65%		D. Others	1	4.3%
	b. No	21	35%	12	<i>Heart disease</i>		
	If yes,				a. Yes	3	5%
	A. pre hypertension	4	10.2%		b. No	57	95%
	B. pri. hypertension	20	51.3%		If yes,		
	C. sec. hypertension	15	38.4%		A. Myocardial	3	100%
8	<i>Diabetes mellitus</i>				infarction	0	-
	a. Yes	22	36.65		B. Cardio myopathy	0	-
	b. No	38	63.35		C. Atrial fibrillation		
	If yes,			13	<i>Blood vessels diseases</i>		
	A. Type I	3	13.6%		a. Yes	0	-
	B. Type II	19	86.3%		b. No	60	100%
9	<i>High blood cholesterol level</i>			14	<i>Obstructive sleep apnea</i>		
	a. Yes	4	6.6%		a. Yes	3	5%
	b. No	56	93.3%		b. No	57	95%
10	<i>Stress</i>			15	<i>If women</i>		
	a. Yes	35	58.3%		Menopause		
	b. No	25	41.6%		a. attained	26	100%
	If yes,				b. not attained	0	-
	A. Acute	16	45.7%	16	<i>Oral pills taken</i>		
	B. Chronic	19	54.2%		a. Yes	0	-
					b. no	26	100%

**Table 2:** Association between Causes and risk factors for Cerebrovascular accident and the demographic variables.

S.No.	Demographic Variables	1-5 Risk Factors	6-10 Risk Factors	11-16 Risk Factors	Chi-Square Value
1	<i>Age:</i>				
	a. Above 55years	35	12	0	1.907
	b. Below 55 years	12	1	0	
2	<i>Sex:</i>				
	a. Male	24	10	0	2.694
	b. Female	23	3	0	
3	<i>Education:</i>				
	a. Primary School	23	9	0	
	b. Secondary School	12	2	0	2.356
	c. Higher Secondary School	10	2	0	
	d. Graduate	2	0	0	
4	<i>Occupation:</i>				
	a. Sedentary Work	11	4	0	1.692
	b. Moderate Work	20	7	0	
	c. Heavy Work	16	2	0	
5	<i>Religion:</i>				
	a. Hindu	45	10	0	7.929*
	b. Christian	0	2	0	
	c. Muslim	2	1	0	

6	<i>Marital Status:</i>				
	a. Married	42	9	0	4.181*
	b. Unmarried	0	0	0	
	c. Widowed	5	4	0	
7	<i>Type of Family:</i>				
	a. Joint Family	29	7	0	0.262
	b. Nuclear Family	18	6	0	
8	<i>Socio economic status:</i>				
	a. Upper	0	1	0	9.924*
	b. Upper Middle	37	6	0	
	c. Lower Middle	10	5	0	
	d. Lower	0	1	0	
9	<i>Previous Source of Information:</i>				
	a. Medical Personnel	13	5	0	1.577
	b. Mass Media	2	0	0	
	c. No Information	32	8	0	

(Note: Significant = \*)

## Conclusion

According to the changing needs of the modern society, a nurse who is working in hospital as well as in the community setting ought to take up the responsibility to plan and educate about causes and risk factors of cerebro vascular accident or stroke and its prevention among the general population.

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## Effect of Music Therapy on Anxiety

Jaskirat Kaur Chahal<sup>1</sup>, Preksha Sharma<sup>2</sup>

<sup>1</sup>Nurse Practitioner Scholar <sup>2</sup>Assistant Professor, University College of Nursing, BFUHS, Faridkot, Punjab 151203, India

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### Abstract

In the present times, all are engaged in their tight schedules and devote least of it to one's health and recreation. Thus the outcomes are unpleasant and unacceptable for us. Due to heavy work stress, need for jobs, study burden and many other reasons exaggerates body's response by exhibiting signs of anxiety. Overwhelming anxiety in daily life routine is not normal. It may result in other associated features with negative behavioural and cognitive changes among human beings. In order to relieve the symptoms of anxiety in their day to day activities, numerous alternative measures such as relaxation therapy, yoga, meditation, sleep therapy and many more are available which have favourable results for living beings. One of them is the music therapy which not only delights our mind but also delivers immense relief to the body. It is safe for administration not has limited adverse effects. It provide relaxation to mind, relieves unwanted stress among the receivers. Swiftly, the therapy has attained a special position in managing the anxiety and similar other sign/symptoms because it is not only an attractive therapy but also easy to administer as it require minimal experience or training and also less equipments. It has been scientifically proved that application of music as a medicine has the potential to relieve critical disease conditions. Some of them are discussed in the article too. Therefore, the article highlights the beneficial modes of using music therapy over anxiety and other related symptoms.

**Keywords:** Anxiety; Music and Music Therapy.

### Introduction

Music is a collection of melodious sound or sounds which provide pleasing experience and exaggerate the emotions too. Since the ancient times the people practice to engage themselves in the field of music in order to regain same potential

and vanity by receiving joy and delightment. Along with this music has the ability to suppress stress faced by us in our day to day activities. Thus, it brings equilibrium in one's life, as the person starts reacting equally to the positive and negative situations of life. The chirping of birds, sounds of waterfall, woodpecker drumming and many more natural rhythmic melodies not only heel stress but also furnish internal relief to the recipient.

The origin of music is unknown as it has occurred prior to the recorded history. Some suggest that the origin of music was like stems from naturally occurring sounds and rhythms. In the pre-historic period, human beings practiced to flourish distinct types of musical instruments like "vana", "Nadi", "dandubhi" and many more to

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**Corresponding Author: Preksha Sharma**, Assistant Professor, University College of Nursing, BFUHS, Faridkot, Punjab 151203, India

**E-mail:** [prekshmaheshwari@gmail.com](mailto:prekshmaheshwari@gmail.com)

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compose contrastive/variant musical sounds and rhythms. It was a distinctive way to rejoice their lives. The Vedas also described the ancient history of music in India through which we perceive the passion and enthusiasm present among the Indians for music [1].

But with passage of time, human beings got so indulged in professional and social activities that they forgot to devote time for themselves. The excessive burden of education, jobs, career and year for success has overwhelmed the other likings and interests of the human beings. Presently, they are behaving like robots than living beings. The internal spirit has vanished and has left behind the mental stress, anxiety and depression which further gave birth to high incidence rates of diseases and deformities. As it is rightly said, persons with physical illness recover earlier than those of psychological ones.

Music means an art of combining sounds of varying pitch to produce a coherent composition that is melodious, harmonious and expressive of ideas and emotions whereas therapy means the treatment measures available to treat and cure physical or psychological illness. So collectively music therapy can be defined as the systematic method of treatment in which physiological and psychological effects of musical sounds and melodies are arranged according to various psychological disorders. According to American Music Therapy Association (AMTA) it is defined as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program [2].

Numerous researches in this field has been done which indicate that music creates balance between mind, body and soul, has positive effects on pain and anxiety, and increases quality of life of sick or healthy individuals. It is also considered as a systematic method of treatment in which physiological and psychological effects of musical sounds and melodies are received according to various physical and mental disorders. According to Gencel, it is a guiding communication method in identifying psychological state of adults and children who have psychological and physical problems [3].

Not only this, Florence Nightingale also emphasised on the importance and beneficial effects of music therapy. She involved it with other nursing interventions while providing care to the soldiers of the first and Second World War with

an aim to relieve the pain and anxiety as well as to encourage their comfort too. In "Notes on Nursing" (1854) she exclaimed the various types of music that can be helpful as well as those that can be harmful to the hospitalized patient [4]. This depicts that the origin of music therapy has a great history and a powerful background.

Many of us worry from time to time. We feel anxious about job interviews, or get nervous about social gatherings. Most of the time these type of feelings are normal or even helpful as they may give us a boost of energy or help us to focus. But if such feelings get overwhelmed may even breed the sign and symptoms of anxiety disorders. People with these disorders have feelings of fear, stress and uncertainty that interfere with their everyday activities. The incidence rate of anxiety and anxiety disorders among human beings in raising its height day by day.

### Music therapy

Music Therapy is the practice of operating music and musical interventions for the aim of restoring, maintaining and uplifting the emotional, physical, and psychological health and well-being. Music has the power to soothe, inspire, energize, uplift and to provide a calming distraction from troubleshooting situations. The thought of operating music as a healing influence or medicine, which could affect health and behaviour is as least as old as the writings of Aristotle and Plato [5]. During the Palaeolithic period, nearly about 10,000 to 50,000 years ago, the shamanic traditions were practiced to manage and cure the disease victims by combining music with early healing [6]. These traditional methods were prevalent in most ancient cultures of the world - in Africa, China, Japan, Korea, Viet Nam, Taiwan, and other Asian countries too (Hawkins, 1994) [7].

Furthermore, Cook (1981) also explored the references to music and healing which have been recorded in the Bible, the writing of Plato, Confucius, and Aristotle. In the holy book of Bible numerous examples of the therapeutic effects of music are described. One in particular is of David playing his harp to the mad Saul, restoring him to his self and to reality [5]. Further, in ancient Greece, the power of music was well-recognized and had widespread perception. They believed that music has the ability to change the social order and was thought to have the power to heal too [8].

Throughout the Middle Ages, (476-1450 A.D.), the Greek believed in the curative powers of music and accepted it as medicine; however, when the Renaissance era came, music's therapeutic effects



were then questioned. The physicians, doctors and scientists of this era made great advances in anatomy, physiology, and clinical medicine, which gave birth to the scientific approach. Therefore, the therapeutic use of music increasingly lost its value [9].

The evolution of the music therapy as a profession came into existence in the countries like United States before the twentieth century and was practically applied in the country in the late eighteenth century for the care of mentally and physically ill patients. The practice was noticed by the two anonymous articles which were published during that time and made references to the idea of utilising the music in a therapeutic capacity in order to heal sick persons. The first was "Music Physically Considered" which was found in *The Columbian Magazine* in 1789 [10]. The examples were illustrated for explaining the fact that a happy change is produced in the body, by the power of music. The second article was "Remarkable Cure of a Fever by Music" was published in *New York Weekly Magazine* in 1796, [11] which granted the information and explanation about therapeutic use of music. There are numerous newspaper articles, journal articles, essays, and treatises on using music as therapy published throughout the world with an idea to promote it.

In the 1940s, doctors and therapists realized that when patients listened to music it fostered a soothing effect, or more specifically the lowering of blood pressure, which in turn lead to reduced anxiety and alleviated pain of the patients. Later in the 20<sup>th</sup> century it gained the public exposure as it was brought into service by applying on veterans of World War I and World War II with an attempt to mitigate the physical and psychological trauma faced by them [12].

Music therapy is a powerful and non-invasive medium to reduce pain, anxiety, and depression. It can be accustomed for children as well as adults. A sample of it is a randomized study by Chan et al., on 47 people under the age of 65 who underwent music therapy compared to 24 controls. They observed that, in case of the music group, there was a statistically significant reduction in depression scores ( $p < 0.001$ ), blood pressure ( $p < 0.001$ ), and heart rate ( $p < 0.001$ ) after 1 month ( $p < 0.001$ ). An implication of this observation is that music can be an effective intervention for older patients too [13].

There are numerous challenges present in the path of application of music therapy which makes it tough for implementation. In a review article by Nilsson, he described the challenges faced by

nurses as they care for the needs of hospitalized patients, and they often have to prioritize physical care over the patient's emotional, spiritual, and psychological needs. In clinical practice, music intervention can be used as a tool to support these needs by creating an environment that stimulates and maintains relaxation, wellbeing, and comfort. Furthermore, the Nilsson's article presented a concrete recommendation for music interventions in clinical practice, such as "slow and flowing music, approximately 60 to 80 beats per minute", "non-lyrical", "maximum volume level at 60 dB", "patient's own choice, with guidance", "suitable equipment chosen for the specific situation", "a minimum duration of 30 minutes in length", and "measurement, follow up, and documentation of the effects" [14].

### Anxiety

Feeling worried or nervous is a normal part of everyday life. Everyone frets or feels anxious from time to time. Mild to moderate anxiety can help you focus your attention, energy, and motivation. Anxiety is defined as a "transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity" (Spielberger, 1983). The causative agents of anxiety are endless and varies from person to person and conditions too. It does not have any age restriction for its exhibition as it is presented by almost all age groups. The act of presentation of sign and symptoms may be abrupt or slow with veracity. Anxiety has various physiological manifestations such as palpitations, trembling, shortness of breath, chest pains, nausea and vomiting. Emotional and behavioural manifestations include restlessness, irritability, apprehension or dread, difficulty concentrating and tension [15]. If anxiety is severe, one may have feelings of helplessness, confusion, and extreme worry that are out of proportion along with the actual seriousness. It is associated with both physiological and psychological complications. It can also increase respiratory rate, blood pressure and heart rate, and lead to nausea if studied clinically.

Anxiety is a mood state associated with anticipation for possible upcoming negative events (Barlow, 2004). While anxiety is a natural human response and adaptive warning mechanism, uncontrollable and excessive manifestations of the condition can develop into a pathological disorder (Cleveland Clinic, 2010). A momentary feeling of

apprehension from heightened autonomic nervous system activity is considered to be 'state anxiety' while the predisposition to perceive ambiguous situations as highly threatening is referred to as 'trait anxiety.' Trait anxiety frequently leads to an anxiety disorder (Funder, 2012) [16-18].

Anxiety is a prevalent symptom experienced by patients admitted to various health care settings. In acute health care settings, patients experience high levels of anxiety prior to any procedure (Nisenson LG, Pepper CM, et al. 1998) [19]. The anxiety is related to a fear of death and disfigurement, loss of control and fear of being in an unfamiliar environment. Even minor surgical procedures can produce significant levels of anxiety and affect post-operative recovery time (Lee et al., 2004) [20].

Whereas, the intensive care unit is different from other departments of the hospitals in terms of the treatment methods and technical equipments used, physical appearance, and the nature of sensitive environment. Whenever any important function of patients decline in a very risky manner, they need to receive treatment in an intensive care unit with a view of maintaining vital functions and applying special treatment methods which are needed (Aslan and Ozer, 2010) [21]. Patients in such units experience change in their comfort levels. Some reasons increase the anxiety level such as surgical procedures, intubation, and ventilation; changes in environment; and movement restriction caused by the existence of invasive and non-invasive tools as described in a research studies by Eti Aslan and Karadağ, 2007; Tracy and Chlan, 2011 [22-23].

The various other invasive procedures are performed on the patients those who stay in hospitals or long-term care facilities during their hospitalization. The procedures could vary from routine blood draws, intravenous infusions, urinary catheter insertion to more complex procedures such as chest tube or central line insertion. The act of performing such invasive procedures could induce significant levels of anxiety among the receivers which further leads to delayed response to care and treatment. (Leach, Tanner & Zernicke, 2000) [24].

Now a days, hospitals mostly focus on alleviating medical interventions and decreasing hospital stays, therefore, patients receive less psychosocial support during hospital stay thus experience increased levels of anxiety (Norred, 2000). It has various physiological manifestations such as palpitations, trembling, shortness of breath, chest pains, nausea and vomiting. Emotional and behavioural manifestations include restlessness, irritability, apprehension or dread, difficulty concentrating and tension [25].

Anxiety is associated with both physiological and psychological complications. It can increase respiratory rate, blood pressure and heart rate, and lead to nausea. It is also associated with negative behavioural and cognitive changes. Many of these anxiety-related complications contribute to adverse outcomes resulting in longer recovery times (Cooke et al., 2005), [26] Some other contrary outcomes include greater anaesthetic requirements, need for increased doses of pain medication, longer hospitalizations and a higher likelihood of post-surgical morbidity (Lee, Henderson & Shum, 2004) [27].

### **Anxiety and Music therapy**

Now a days, Music therapy has been established as a complementary therapy that uses music to achieve therapeutic outcomes. It is administered effectively by various health care professionals, including nurses, in the clinical and sub-clinical settings. Music therapy has been linked to cognitive, emotional and physical well-being of the receivers. Scholars agreed that many of the therapeutic possibilities of music melody are due to its influence in the living process of the human beings. It was born from their mind and emotions that provides it the ability to realize and attain changes in them (Arruda, 2005). This reaction could be a valuable finding for the healthcare providers of the patients in hospital environment, especially in Intensive Care Units (ICU), where normally patients develop stress and anxiety sensations due to the high complexity in the environment (Backes, 2003) and encircled with imaginary ideas of life, ending thoughts when they have to deal with difficult and unknown situations (Leao et al., 2010; Souza and Marcheti, 2006). In this environment the music is readily able to influence and transform the context, the behaviour and also the feelings of the people. (Backes, 2003) [28-31].

As it is rightly said that music exhibits the power to enhance the well-being and distract patients from unpleasant symptoms therefore, applied by health care personals in patient management. Although there are wide variations in individual preferences, even then music appears to exert direct physiologic effects through the autonomic nervous system. It also has direct effects by modifying caregiver's behaviour. Music effectively reduces anxiety among people. It has potential to improve the mood of medical and surgical patients and is applicable for patients in intensive care units or those who are undergoing procedures.

With the passage of time, Music therapy is

becoming a well-researched and established complementary therapy due to its positive effects on patient outcomes. Bradt and Dileo (2013) indicated that listening to music in persons with coronary heart disease may too have a beneficial effect on anxiety, especially those suffering with a myocardial infarction. In another systematic review Bradt and Dileo (2014) indicated in a systematic review that music listening in mechanically ventilated patients' in critical care units may have beneficial effects on their state anxiety [32-33].

In summary the advantageous effects of using this therapy for managing anxiety can be enlisted as:

- ✓ It is safe and not associated with any adverse effects.
- ✓ It is easy to implement.
- ✓ It is less expensive to administer than other types of conventional therapies.
- ✓ Its application requires minimal involvement by health care professionals.
- ✓ It can be absorbed without any effort on the part of the listener.
- ✓ It provide relaxation to mind, relieves unwanted stress and promotes calm and quite feelings in the receivers.

Music is a big ally in the nursing care humanization, as a result of the findings exposed earlier in this article, which validated that music therapy effects go further than patient's emotional aspects, interfering directly in physiological functions, and contributes to affective relationship between patients and their family.

## Conclusion

Anxiety is easily reflected by the face and eye contact. As the person receives music as a therapeutic aid; he/she begins to develop self-confidence and also maintains eye contact because it is not only received as a booster dose to boost up the mind and spirit but also to tackle aside the daily problems and tricky situations of our life. Music being a vast field of knowledge, patience, love with nature and natural beauty, therefore can easily help in overcoming anxiety and other related symptoms.

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## Effect of humour Therapy on Psychological Health of Cancer Patients

Ramandeep<sup>1</sup>, Preksha Sharma<sup>2</sup>

<sup>1</sup>M.Sc Nursing Scholar, <sup>2</sup>Assistant Professor, University College of Nursing, BFUHS, Faridkot, Punjab 151203, India.

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### Abstract

Cancer is a distressing disease all over the world and is the second most common cause of death worldwide. Cancer is the uncontrolled growth of cells inside the body that have no useful purpose for human beings. Cancer affect the patients both physically and psychologically, Most of cancer therapists focus on the physical symptoms of the cancer patients but does not pay attention to the psychology of the cancer patient results in more psychological distress or problems among cancer patients. Psychological problems and distress among cancer patients includes depression (most common), fatigue, stress, anxiety low self-esteem. Humour is considered as an alternative medical treatment along with other cancer treatment modalities for the cancer related psychological problems. Studies showed that humour therapy improves the immune system, reduces pain threshold, reduces stress producing hormones inside the body, improves the functioning of natural killer cells, relaxes the muscles, improves quality of life and also leads to psychological well-being among cancer patients. Humour therapy also increases the level of immunoglobulin G and immunoglobulin M inside the body resulting in beneficial health outcomes. Humour therapy act as channel for cancer patients to express their inner perceptions, feelings about the disease condition in front of health professionals. Several studies conducted on the humour therapy the results of studies showed that humour therapy had a positive effect on the psychology of the cancer patients. Humour therapy act as a channel for communication between nurse and patient.

**Keywords:** Humour therapy; Cancer patients; Depression; Stress; Anxiety; Psychological health.

### Introduction

#### *Cancer*

Greek physician Hippocrates (460-370 BC), "Father of Medicine." used the terms carcinos

and carcinoma to describe tumors. In Greek, these words carcinos and carcinoma refer to a crab, appears finger-like spreading projections [1].

Cancer is the collection or group of related diseases. Cancer is defined as abnormal, uncontrollable growth of cells. In all types of cancer, some of the body's cells begin to divide without stopping and spread into surrounding tissues. Cancer can start anywhere in the body and cancer cells have the ability to metastasize from their site of origin to other distinct body organs [1].

Cancer is now a days deadly killing disease worldwide. Studies showed that there are three potential causative factors that results in tumor

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**Corresponding Author: Preksha Sharma** Assistant Professor, University College of Nursing, BFUHS, Faridkot, Punjab 151203, India.

**E-mail:** [prekshamaheshwari@gmail.com](mailto:prekshamaheshwari@gmail.com)

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development [3]. 1: environmental pollution, particularly diet, industrial pollution, and viruses, 2: systemic factors, such as immune surveillance and 3: is genetic factors such as the degree of the susceptibility to the cancer. Cancer is not disorderly growth of immature cells, but rather a logical, coordinated process in which a normal cell undergoes changes and acquires capabilities to spread to another parts of the body Cancer cells can be benign and malignant. Benign cancer cells does not invade to other parts of the body, considered less cancerous, usually small, usually resemble the tissue of origin and occur less often but malignant cancer cells metastasize to other parts of the body, occur more often and having poor resemblance to tissue of origin.

#### *Incidence and Prevalence of cancer*

The second most common cause of death in the United States is cancer. International Agency for Research on Cancer (IARC), estimates that there were 12.7 million new cancer cases in 2008 worldwide, from which 5.6 million occurred in economically developed countries and 7.1 million in economically developing countries. The corresponding estimates for total cancer deaths in 2008 were 7.6 million (about 21,000 cancer deaths a day), 2.8 million in economically developed countries and 4.8 million in economically developing countries. By 2030, the global burden of new cancer cases is expected to grow to 21.4 million and 13.2 million cancer deaths simply due to the growth and aging of the population, as well as reductions in childhood mortality and deaths from infectious diseases in developing countries. Cancer is the primary cause of death from diseases among children up to the age of 14 years and approximately 60% of cancer deaths occur among individuals older than 65 years of age. There are more than 200 types of cancer which affects the humans. Each cancer with in these various diseases has an altered morphology and biochemistry from the normal cell. Breast cancer is most common among women followed by cancer of cervix. Colon, lung and prostate cancer is most common among men [10]. Other types of cancer include head and neck cancers, cancer of oesophagus, pancreatic cancer, liver cancer, leukemias, multiple myeloma, lymphomas [32].

Cancer cells have the microscopic as well as kinetic properties. Microscopically they include pleomorphism, hyperchromatism, polymorphism, aneuploids and abnormal chromosomal arrangement. Loss of control proliferation, loss of capacity to differentiate, altered biochemical

properties, chromosomal instability and capacity to metastasize are the kinetic properties of the cancer cells [35]. A common misconception is that cancer is a population of cells that reproduces much faster than the normal cells. In fact many cancer cells are slow growing also when compared with normal cells i.e. cells of the epithelial lining and bone marrow bone marrow cells.

### **Physical and Psychological problems among cancer patients**

#### *Physical problems among cancer patients-*

Physical symptoms in cancer patients vary according to the type of cancer and treatment modalities. Physical symptoms would be short term and long term. They include nausea, vomiting, fatigue, sleep disturbances, pain, diarrhea, constipation, loss of appetite, cachexia, myalgia, lymphedema, sexual dysfunction, neuropathy, skin rashes and toxicity.

#### *Psychological problems among cancer patients-*

##### *Stress*

In Latin word stress is called as "stringer" which means "tighten". In the 17<sup>th</sup> century it was considered as physical tension or pressure after that in the 20<sup>th</sup> century it was considered as psychological pressure or tension which someone receive from outside [10]. Stress can be categorised into three categories- stress as a stimulus, as a response and as an interaction. Due to modernization the number of stressors increases in the society. Adaptive skills and coping mechanisms should be used to relieve stress and reduces the impact on the health. The study results of the medical and psychological world on stress showed that most of illnesses occur due to the stress. Humour therapy is the non- pharmacological treatment used to overcome stress among cancer patients. Humour therapy helps to reduce the stress making hormones inside the human body. The study result showed that laughter therapy may decrease anxiety, stress, and depression and increase the quality of life in cancer patients [11].

##### *Anxiety*

Anxiety is normal reaction to patients diagnosed with cancer. Symptoms of anxiety includes irregular heartbeat, shaking and extreme levels of worry [19]. Cancer Patients may feel anxiety at any and all the times during screening, diagnosis and treatment. 18% cancer patients suffer from anxiety

disorders and 48% patients suffer from high level of anxiety [12]. Moreover, a six month follow up study was conducted to assess the anxiety and depression in 106 patients with head and neck cancer. The study result showed that high rates of anxiety were found at pre-treatment, but steadily declined over time (from 27.3% to 6.4%, and later 3.3%) and prevalence of depression rates ranges from 8.5% at pre-treatment to 24.5% and 14% at 3 and 6 months, respectively, after treatment [16].

### *Depression*

The word depression first described by Hippocrates which means "melancholia". Depression is most common psychological disorder among cancer patient with high prevalence rate. Depression can be defined as a depressed pathological state. It is an emotional response of being sad, depressed, feeling helpless, worthlessness and hopelessness which relieves when situation improves. Depression is a disease resulting in alteration in the neurotransmitters in the brain. Norepinephrine, serotonin and dopamine are the neurotransmitters which are affected in depression which makes the person unable to carry his or her daily living activities effectively [4]. A recent studies showed that reduction in the secretion of neurotransmitters i.e. norepinephrine, dopamine, serotonin leads to depression [8]. Depression affects both mind and body of the person [4]. Depression does not depend on the situation and continues to increase if it is not cured in its initial stage [17].

### **Treatment modalities for cancer**

There are four primary modalities for the treatment of cancer that are surgery, chemotherapeutic drugs, radiation therapy and biotherapy. Surgery is the initial and preferred choice of treatment for cancer patients. As a result of advances in the surgical techniques, a better understanding of the metastatic pattern of individual tumors, intensive postoperative care, tumors can be removed from mostly any part of the body. If cancer is detected earlier and cancer is localised then surgery is the best treatment modality for cancer patients. It is estimated that 40% of cancer patients are treated by surgery alone and one third are cured fully from cancer. Surgical treatment fails when there is presence of metastasis at the time of initial diagnosis. 50% Metastasis occurs in cancer patients and approximately 90% of cancer patients undergo some type of surgical intervention for diagnosis, initial treatment and management of complications [35,38].

Chemotherapy is a form of secondary treatment after local treatment. In chemotherapy cytotoxic drugs are used to treat cancer cells. Chemotherapy is the systemic treatment. The primary goal or focus of the chemotherapy is to prevent multiplication of cancer cells, invading to adjacent tissues, or metastasis from actual origin of cancer cells to distant body organs. Chemotherapy can be used in five ways i.e. adjuvant chemotherapy, neoadjuvant chemotherapy, primary therapy, induction therapy and combined chemotherapy. It is showed that the use of continuous infusion chemotherapy along with radiation therapy has produced substantial improvement in the survival rates among the cancer patients. Chemotherapeutic drugs act by direct interference with the DNA that leads to inhibition of the enzymes related to RNA and DNA synthesis or both, also destruction of necessary proteins [35].

Radiation therapy is the localised treatment for cancer used along with other treatment modalities. In radiation therapy high energy ionizing rays are used to treat the cancer. Approximately 60% of cancer patients are treated with radiation therapy. Radiation therapy can be provider to the cancer patient from outside the body (external beam radiation therapy) and placing a radioactive source inside the body (internal beam, radiation therapy) near to the cancer cell. The radio sensitivity of cancer cells depends upon type of cell, phase of cell life, oxygenation, degree of differentiation and division rate of the cell [39].

Biotherapy also known as immunotherapy defined as treatment with agents derived from biological sources that affect the biological response. Agents which are used in biotherapy are derived from the mammalian genome [37]. In biotherapy agents are used to boost the bone marrow cells to produce enough red blood cells, white blood cells and platelets.

### *Adverse effects of cancer treatment modalities*

Above mentioned cancer treatment modalities are also having adverse effects on cancer patients like after surgical treatment patient is at risk for fluid and electrolyte imbalance, nutritional deficiencies, hypoxemia related to the effect of anaesthesia. Adverse effects include nausea, vomiting, constipation, diarrhoea, stomatitis, loss of appetite, weight loss, taste change, fatigue, mouth decay and dental caries, xerostomia, esophagitis, radiation fibrosis, pain etc.

Chemotherapy and radiation therapy almost having the same adverse effects but the main difference is that in chemotherapy hair loss is all

over the body but in radiation therapy hair loss in from the area in which radiation is provided to the patient. As cancer is a life threatening disease often results in death so cancer patients also having psychological problems among them because when someone is diagnosed with cancer it will also affect the mental ability of the cancer patient like first he/ she starts to deny the truth about the disease condition and also become anxious about the treatment modalities, cost of treatment and most important is the change in body image after cancer treatment. Psychological problems among cancer patients includes depression, stress, anxiety, low self-esteem, solitude. All the condition makes the person unable to carry their daily living activities effectively. So for along with other cancer health care team members psychiatrists, psychologist, counsellors are also involved in the health care team for cancer patients.

### **Humour**

It is very easy to make someone cry but much harder to make someone laugh. Humour word is derived from the humoral medicine of the Greek Ancient. Humour is the tendency to experience or provoke laughter. Since 1970 humour is regarded as long standing complementary and alternative medical treatment for various health problems. Studies on humour shows positive effects not for cancer patients but also for dialysis patients, transplant patients, elderly person, postpartum women and for smokers also [27,28,29]. We can say it is outward expression or feeling of amusements. Humour contributes to higher subjective feeling of well-being among humans i.e. both physically and psychologically [34].

Researches shows that humour is of 2 types i.e. adaptive humour and maladaptive humour. Humour helps to break down social barrier and makes people to feel connected and more willing to share their inner view about the deadly disease. Humorous stimulus helps to increase galvanic skin response which activates the sympathetic nervous system [24]. Adaptive humour consist of facilitative (uses jokes to create humour) and self-enhancing humour (people under this style uses the humour as mechanism to reduce stress), self-defeating (racist and sarcasm jokes are used to make listeners laugh) and aggressive humour (self-disparaging jokes are used to make others laugh) is maladaptive humour [20]. Studies showed that humour have same effect on the body as aerobic exercises as it increases the blood flow to the vital organs [22].

### *Humour therapy*

Humour therapy is kind of a communication that enables the person to interact with others. A very long time has taken for humour therapy to become a recognised medical treatment not for only cancer patients but also for the treatment of various other illnesses. Hippocrates and Aristotle started the humour therapy in the 20<sup>th</sup> century but failed to gain recognition in the medical treatment. After Hippocrates and Aristotle Norman Cousins in the mid 20<sup>th</sup> century succeeded to establish the effects of humour therapy in a medical setting. Norman Cousins are the first who introduced that humour has positive effect on the psychology of human beings. Several studies showed that humour therapy had a positive effect on the physical as well as psychological aspects of cancer patients. Study result shows that humour therapy boost the immune system helps to fight with the infectious agents [13]. Many research studies have investigated that humour therapy have positive effects on certain aspects of health such as immunology, pulmonology, oncology, psychiatry, rehabilitation and palliative care [18]. Humour therapy also beneficial for the nurse patient interpersonal relationship [25].

### *Humour therapy and Psychological effects*

Humour therapy reduces stress by improving the activity of NK cells inside the body and also improves the person's immune system. Physically humour therapy relaxes muscle, improves respiration, stimulates circulation, decrease stress hormone, elevates pain threshold and tolerance, enhance mental functioning, increases body's immune defence and psychologically it reduces stress, anxiety, tension, depressive symptoms, improves psychological well-being and patient care, improves self-esteem, quality of life, enhance memory and cognitive thinking and increases social interaction.

Literature have indicated that psychological therapies help the cancer patients to know about their disease condition, improve their coping skills, improves their ability adjust with the society and improves their quality of life [30]. A randomized control trial study was conducted to assess the feasibility and efficacy of a humour training for people suffering from depression, anxiety and adjustment disorder. The study result showed that humour training has positive effects on people suffering from depression, anxiety and adjustments disorders in the experimental group [25].



Moreover a study was conducted to assess the prevalence of depression among 100 adults with cancer. The study result revealed that only 15 (23%) met quality criteria. Depression in the defined subgroups was 5% to 6%, in outpatients, 4% to 14%, in inpatients 4% to 11% in mixed outpatient and inpatient samples and 7% to 49% in palliative care [8].

The literature showed that humour had a positive effect on the immune system [22]. Improvements in pain thresholds and elevations in natural killer cell activity consistently appeared in quantitative experimental studies. Another study on the effects of laughter therapy on depression among middle aged women and their blood serotonin level was conducted. The study results revealed that blood serotonin level was increased in the group who receive laughter therapy as compared to control group [10]. Therefore humour therapy helps to improve serotonin, dopamine level. Humour therapy may be very effective in reducing depression and serves as a non- pharmacological, alternative treatment for cancer patients [16].

Endorphins activated by humour therapy helps to refresh mood. Now a days non pharmacological and non-invasive measures are mostly used psychological problems. No specialised equipment is required to create humour. It is easily accessible and acceptable to human beings [17]. The literature showed that humour had a positive effect on the immune system [22]. Improvements in pain thresholds and elevations in natural killer cell activity consistently appeared in quantitative experimental studies. In addition, measurements of specific neuroendocrine and stress hormone levels revealed biochemical changes that suggested improved physical stress responses and increased feelings of well-being after humorous interventions [7]. Another study on the effects of laughter therapy on depression among middle aged women and their blood serotonin level was conducted. The study results revealed that blood serotonin level was increased in the group who receive laughter therapy as compared to control group [10].

Variety of researches have been conducted on humour therapy to see the effect on psychological health among cancer patients [3]. A quasi-experimental study was conducted to assess the effects of laughter therapy on depression, quality of life, resilience and immune responses in 37 breast cancer survivors. The results showed that laughter therapy was effective in increasing the quality of life and resilience in breast cancer survivors. but

depression and immune responses did not differ significantly between the groups [4].

Correlational evidences are there that humour therapy had a positive effect on well-being of cancer patients. Studies showed that atmosphere of humour results in better patient care, less anaesthesia time, less operating time and shorter hospital stay. Humour does not only eliminate negative emotions but also helps to elicit positive emotions. Humour works on basic mechanism i.e. downregulation of negative emotions and upregulation of positive emotions resulting in positivity related to life satisfaction, quality of life and well-being [15].

## Conclusion

Humour therapy as an alternative treatment for cancer patient, does not require special equipment. Humour therapy is easily accessible and acceptable therapy among patients. Humour therapy had a positive effect on physical as well psychological health of cancer patients. Physically it improves body temperature, heart rate, lung capacity, musculoskeletal strength, brain functioning and psychologically it reduces fatigue, stress, anxiety, depression, improves self-esteem and quality of life among cancer patients. Another study result showed that humour therapy not only reduces unpleasant feelings among cancer patients but it also has positive effect on the dementia patients, memory failure patients, improves insomnia among elderly patients. Humour therapy also improves social interaction and social relationship of cancer patients with the society and family members. Humour therapy improves the activity of endorphins inside the body which helps to elevate the unpleasant feelings and improves the mood. All in all creating humour among cancer patients results in overall physical as well as psychological well-being.

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## Inhalation Technique for Asthma and COPD

**Sarika Vijay Rokade**

Associate Professor, MKSSS's Sitabai Nargundkar College of Nursing, Nagpur, Maharashtra 441110, India.

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### Abstract

Asthma causes significant changes in patients life as well as their significant others. Many studies have conducted on inhalation technique and it is seen that not only patient but health care provider has lack of knowledge on different asthma devices and their proper use. Use of bronchodilators and inhaled corticosteroids through inhaler device can prevent episodes of asthma exacerbations. Many guidelines published for asthma control suggested importance of inhalation technique training and asthma action plan. Over 15 million Indians are suffering from bronchial asthma and this burden is constantly increasing. Indian hospitals are usually overcrowded and due to lack of time and manpower, any asthma education is usually neglected aspect. This article will provide information regarding asthma, inhaler devices and correct technique of inhaler use.

**Keywords:** Inhalation technique; Asthma; COPD.

### Introduction

Asthma is a chronic inflammatory respiratory disease. It can affect people of any age, but often starts in childhood. It is characterised by attacks (also known as exacerbations) of breathlessness and wheezing, with the severity and frequency of attacks varying from person to person. The attacks are associated with variable airflow obstruction and inflammation within the lungs, which if left untreated can be life-threatening, however with the appropriate treatment can be reversible. (National Clinical Guideline Centre, 2015).

Asthma is not just a public health problem for developed countries. In developing countries, however, the incidence of the disease varies greatly. India has an estimated 15-20 million asthmatics and 10-15% prevalence is seen among 5-11 year old children. (World Health Organisation, 2016).

Though there are advancement in technology and many awareness programmes conducted in hospital; still the morbidity and mortality from asthma is high. Asthma can be controlled by proper use of steroids, providing knowledgeable asthma management, and by improvement in inhaler technique skill (Barthwal, Katoch, & Marwah, 2009).

**Corresponding Author:** Sarika Vijay Rokade, Associate Professor, MKSSS's Sitabai Nargundkar College of Nursing, Nagpur, Maharashtra 441110, India.

**E-mail:** sarikabhange\_2007@rediffmail.com

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### Inhaler and inhalation technique

"Inhaled therapy is a mainstay in the management of asthma and COPD. Metered dose inhalers (MDIs), dry powder inhalers (DPIs), and nebulizers are the most common inhaler devices used to administer aerosolized medication in routine respiratory

practice". Errors in inhaler technique are very common among COPD and asthma patients in daily real-life practice. Poor inhaler technique has been associated with inadequate drug delivery to the lungs and thus with poor disease control and worse disease outcomes". (Ocakli et al., 2018).

Regular controller treatment, particularly with inhaled corticosteroid (ICS)- containing medications, markedly reduces the frequency and severity of asthma symptoms and the risk of having a flare-up. (Global Initiative for Asthma, 2018).

The first pressurized metered dose inhaler (pMDI) was introduced in 1956, after that device became popular and successful. The quality of pressurized metered dose inhaler (pMDI) has continuously improved. This improvement was reached to great success after switch of device from CFCs (chlorofluorocarbons) to HFA (hydrofluoroalkane). After success of pMDI in 1987 the first multidose DPI device with budesonide, an inhaled gluco- corticosteroid (ICS), was used; now there are many devices available in dry powder form. In today's era Inhalation is the preferred route of drug administration for patients with asthma. (Haidl, Heindl, Siemon, Bernacka, & Cloes, 2016)

It has been estimated that on average more than 30% of patients poorly coordinate activation of the device with inspiration. Common errors include breathing in, too quickly, stopping inhalation immediately after firing the pMDI, activating the device more than once during a single breath and failing to hold the breath. (Sanchis, Corrigan, Levy, & Viejo, 2013).

A comparative study conducted between asthma and COPD patients for common errors in inhalation and their findings emphasize that substandard inhaler technique is common in real life for both MDIs and DPIs and regular assessment and reinforcement of correct inhalation technique is very important for achieving treatment efficacy and improved disease outcome. (Ocakli et al., 2018).

### Steps of correct inhalation Techniques

According to national asthma council Australia; Checklist for manually actuated pressurised metered-dose inhaler (puffer) is as follows, (National Asthma Council Australia., n.d.).

1. Remove cap. (Some must be squeezed at the sides to release).
2. Check dose counter (if device has one).
3. Hold inhaler upright and shake well.
4. Breathe out gently (away from inhaler).
5. Put mouthpiece between teeth (without biting) and close lips to form good seal.
6. Start to breathe in slowly through mouth and, at the same time, press down firmly on canister.
7. Continue to breathe in slowly and deeply.
8. Hold breath for about 5 seconds or as long as comfortable.
9. While holding breath, remove inhaler from mouth.
10. Breathe out gently (away from the inhaler).
11. If more than one dose is needed, repeat all steps starting from step 3.
12. Replace cap.

*Steps for Dry Powder Inhaler:-* (Asthma Education, Program, & by the National Institutes of Health, 2013).

1. Remove cap and hold inhaler upright (like a rocket). If the inhaler is a Diskus®, hold it flat (like a flying saucer).
2. Load a dose of medicine according to manufacturer's instructions (each brand of inhaler is different; you may have to prime the inhaler the first time you use it). Do not shake the inhaler.
3. Stand up or sit up straight.
4. Take a deep breath in and blow out completely to empty your lungs. Do not blow into the inhaler.
5. Place the mouthpiece of the inhaler in your mouth and close your lips around it to form a tight seal.
6. Take a fast, deep, forceful breath in through your mouth.
7. Hold your breath and count to 10.
8. Take the inhaler out of your mouth. Breathe out slowly, facing away from the inhaler.
9. If you are supposed to take more than 1 inhalation of medicine per dose, wait 1 minute and repeat steps 2 through 8.
10. When you finish, put the cover back on the inhaler or slide the cover closed. Store the inhaler in a cool, dry place (not in the bathroom).
11. If using an inhaled corticosteroid, rinse out your mouth with water and spit it out. Rinsing helps to prevent an infection in the mouth.

## Conclusion

Health care providers including nurses play important role in preventive aspects of patient care. Asthma is a major illness requires medical attention, but this disease can be effectively controlled if proper preventive care is taken by the patient. This need should be fulfilled by asthma education. Inhalation technique training is very important aspect of asthma education. Extensive research is needed in this area to know effectiveness of different strategies to improve inhalation skill among asthmatic patients.

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## Safe Handling of Chemotherapeutic Drugs in Oncology Nursing Practice

Sarita Devi<sup>1</sup>, Preksha Sharma<sup>2</sup>

<sup>1</sup>MSc. Nursing Scholar <sup>2</sup>Assistant Professor, University College of Nursing, BFUHS, Faridkot, Punjab 151203, India.

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### Abstract

Cancer is a group of diseases that occurs when an abnormal cell is formed by the genetic mutation of the cellular DNA. These abnormal cells have capability to proliferate abnormally and rapidly and can lead to changes in surrounding tissue. According to World Health Organization there would be estimated that 27 million cases of cancer can be expected for 2030, 17 million deaths from cancer, and 75 million individuals living with cancer each year. There is a successful history of Drugs in treating illnesses, and they are responsible for many of our medical advances. However, virtually all drugs have side effects associated with their use by patients, and nurses also have risk of side effects who handle them. Nurses are at risk of suffering side effects that might result from exposure to even very small concentrations of certain chemotherapeutic drugs. Related studies found the relationship between exposure to chemotherapeutic drugs and acute adverse reactions: urine mutagenicity; skin disorders; fetal loss during the first trimester of pregnancy; spontaneous abortion; malformations and genotoxicity. Organizations such as National Institute for Occupational safety and Health administration (NIOSH), American Society of Hospital Pharmacist (ASHP), the Oncology Nursing Society, American Society of Clinical Oncology (ASCO), and Occupational Safety and Health Administration (OSHA) have recommended safe handling guidelines for chemotherapeutic drugs. All healthcare workers who work with chemotherapeutic drugs have been advised to adhere to these safety guidelines. These guidelines include proper use of personal protective equipment during reconstitution of chemotherapeutic drugs, administration, spill management, disposal of chemotherapeutic waste and management of accidental exposure to chemotherapeutic drugs.

**Keywords:** Chemotherapeutic drugs; Oncology; Safe handling; Cancer; Nursing.

### Introduction

Cancer is a group of diseases that occurs when an abnormal cell is formed by the genetic mutation of the cellular DNA. These abnormal cells have

capability to proliferate abnormally and rapidly and can lead to changes in surrounding tissue. This can be invade to adjacent tissues and metastasize to other areas of the body to form cancer spread in other parts of the body. According to American Cancer Society (ACS), Cancer is a group of disease characterized by abnormal, uncoordinated, uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it leads to no apoptosis and it can result in death [1]. Cancer is the second death causing problem throughout the world [2]. According to World Health Organization there would be estimated that 27 million cases of cancer can be expected for 2030, 17 million

**Corresponding Author:** Preksha Sharma, Assistant Professor, University College of Nursing, BFUHS, Faridkot, Punjab 151203, India.

**E-mail:** [prekshamaheshwari@gmail.com](mailto:prekshamaheshwari@gmail.com)

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deaths from cancer, and 75 million individuals living with cancer each year. The greatest effect of this increase will occur in middle-income and developing countries. In addition, this increase is due to the result of the global transformations that have occurred in recent decades, which changed the situation of populations due to increased urbanization, sedentary lifestyle changes, and consumption patterns [3].

According World Health Organization, 7.56 lakh Indians died with cancer by 2014-2015 and mostly the patient died without medical attention. Year 2015 data shows that India has highest rate of cancer in the world [4].

There is a successful history of Drugs in treating illnesses, and they are responsible for many of our medical advances. However, virtually all drugs have side effects associated with their use by patients, and nurses also have risk of side effects who handle them. Nurses are at risk of suffering side effects that might result from exposure to even very small concentrations of certain chemotherapeutic drugs [5].

Chemotherapeutic drugs (CDs) are the most widespread worldwide modality used in cancer treatment, and other autoimmune diseases. They are also known as chemotherapeutics, chemotherapeutics, or anticancer drugs. These drugs are working by interrupting the cell cycle and killing rapidly dividing (cancer cells) [6]. However, their non-selective mechanism of action affects both cancerous and non-cancerous cells, that resulting in well documented side effects [7]. These drugs are responsible to improve quality of life, decrease length of illness, and cure cancer [8].

#### **Occupational exposure of chemotherapeutic drugs among nurses**

Toxicity of chemotherapeutic drugs is known since 1940's, when they were first introduced for the treatment of cancer. During the 1970's evidence came to light indicating that health care workers may be at risk for harmful effects from chemotherapeutic drugs as a result of occupational exposure. Since that time reports from several countries have documented drug contamination of the work place, identified drugs in the urine of the workers and measured genetic responses in the workers. The first evidence documenting occupational exposure in health care workers was provided by a study by Falck and colleagues. Nurses who prepared and administered chemotherapeutic drugs had higher indicators of mutagenic substances in their urine compared with non exposed workers [9].

Side effects of chemotherapeutic drugs (e.g. immune suppression, nausea, and hair loss) are due to damage to these cells. Inherent toxicity of these drugs is the basis for their potential adverse risks from occupational exposure to them. If nursing personal are exposed to these drugs, even the therapeutic doses which patients receive could cause the same effects. Related studies found the relationship between exposure to chemotherapeutic drugs and acute adverse reactions: urine mutagenicity; skin disorders; fetal loss during the first trimester of pregnancy; spontaneous abortion; malformations and genotoxicity [10]. Experimental animal studies have also identified carcinogenic and teratogenic effects associated with exposure to several antineoplastic agents, including the alkylating agents and antimetabolites [11].

There has been concern for many years about potential exposure and subsequent effects in healthcare workers who handle cytotoxic or antineoplastic drugs [12]. Till date, the challenge of protecting workers' health is persisting and expanding, with an increasing number of publications demonstrating that contamination of cytotoxic drugs is still present on work surfaces after cleaning procedures are concluded [13].

Exposure to chemotherapeutic drugs among nurses working in oncology department has been increasing due to the widespread use of these agents. The chemotherapeutic drugs exposure may lead to toxicological effects including carcinogenicity, teratogenicity, and mutagenicity in human [14]. Route of exposures to chemotherapeutic drugs may occur through inhalation, skin contact, ingestion, or injection. Inappropriate hygienic behaviors such as eating, drinking or smoking during preparation or in preparation area, administration, and disposal of chemotherapeutic drugs are wrong behaviors that increase the risk of exposure [5].

There are chances of accidental exposure to chemotherapeutic agents at various stages during handling (i.e., transport, unpacking, storage, handling, administration, and disposal) [15]. The most common route of exposure is by way of skin or mucous membrane contact which is why personal protective equipment is highly recommended. However, even nurses that wear recommended protection can be at risk of exposure to chemotherapy when unintentionally touching contaminated surfaces with their bare hands. These surfaces often include counters, floors, drug storage areas, waste containers and drug vials [16].

### **Need of safe handling of chemotherapeutic drugs**

Cancer is one of the most prevalent diseases around the world. According to recent reports by World Health Organization (WHO), the incidence of cancer will increase in future decades. In fact, this condition is expected to be the most common cause of mortality [17]. Exposure to chemotherapeutic drugs in the workplace is a significant occupational problem for nurses. Nurses and other health care workers are major subject to chemotherapeutic drugs exposure during routine activities related to patient care. Exposure is associated with a risk of adverse health outcomes caused by chemotherapeutic drugs. Use of personal protective equipments can reduce nurses' chemotherapeutic drugs occupational exposure [18].

Knowledge is important to safe nursing practices in all settings, but it is especially significant when a knowledge deficit of the nurse practices threatens personal safety or the safety of the patient. Past research suggests that chemotherapy may have unintentionally compromised the oncology work setting for more than thirty years [19]. The main role of nurses in the field of oncology is chemotherapy preparation and administration which is sensitive area in oncology nursing where little negligence or mistake may lead to adverse health hazards for patients, staff and environment. Lacking of knowledge and training of the staff leads to fatal incidences such as over dose of chemotherapy, wrong calculations of drugs, wrong route of transfusion which sometimes results in patient's death [20].

Nurses are the main groups among health professionals that are at more risk of exposed to chemotherapeutic drugs in patient care settings. Although the potential therapeutic benefits of chemotherapeutic drugs outweigh the risks of side effects for ill patients, but nurses who provide direct nursing care to cancer patients by administering chemotherapeutic drugs risk these same side effects with no therapeutic benefit [21].

As we knows nurse is the key person to care for cancer patient and nurses with specialized knowledge and skills play a major role in ensuring safe and competent administration of chemotherapeutic drugs and care of people receiving chemotherapeutic drugs [22].

Little negligence or mistake may lead to adverse unpleasant effects for patients, staff and environment. There is a need to provide specialized knowledge to nurses who providing care to patients

receiving chemotherapy regarding safe handling of chemotherapeutic drugs in order to ensure safety for both patients life and for their own safety of the jobs. Many nurses have been fired from their job due to medication errors. Nurses need more education about chemotherapy in nursing school during their training period and through in-service education during their job [23].

### **Prevention of exposure to chemotherapeutic drugs**

Organizations such as National Institute for Occupational safety and Health administration (NIOSH), American Society of Hospital Pharmacist (ASHP), the Oncology Nursing Society, American Society of Clinical Oncology (ASCO), and Occupational Safety and Health Administration (OSHA) have recommended safe handling guidelines for chemotherapeutic drugs. These guidelines recommend the application of hierarchy of control technologies to lessen workplace hazards, which include engineering controls, administrative controls, work practice controls, and personal protective equipment (PPE) in order of decreasing effectiveness. All healthcare workers who work with chemotherapeutic drugs have been advised to adhere to this safety guidelines [24].

According to these standards there is a great need to conduct a comprehensive educational program and monitor nursing competency at specific intervals by each institution [25].

ONS also recommends PPE, which is known to protect health care workers against exposure to chemotherapeutic drugs. Follow these best practices for safety:

- Donning two pairs of gloves tested against chemotherapy agents during all handling of chemotherapeutic drugs, that include preparation, administration and disposal.
- Wearing a disposable gown which would be made from a low permeable fabric.the gown should be with back closure.
- Using eye and face protection to protect from splashing during handling of chemotherapeutic drugs [26].

#### *Gloves*

Nitrile, polyurethane, neoprene, or latex Gloves are recommended during handling with chemotherapeutic drugs. Allergy causing tendency of Latex should be kept into consideration during glove selection. Vinyl gloves should not be used

because they don't resist chemotherapeutic agents. The frequency of glove changes can be adjusted according to the level of exposure at each step in the medication circuit. For example, when administering reconstituted medications, workers should change gloves immediately if the gloves become torn, punctured, or visibly contaminated with a chemotherapeutic drug, and should ensure to follow Routine Practices. Great care should be taken in the removal of gloves so as to not contaminate the skin. Nurses should wear two pair of gloves, put on the first pair under the cuff of gown and another on the cuff of gown.

#### *Gown*

Gowns used for handling chemotherapeutic drugs should be disposable; should be made of lint-free, low-permeability fabric; should have long sleeves with tight-fitting cuffs; and should fasten in the back. Gowns have to be changed in the event of contamination, spillage, or rips, and at the end of the procedure.

#### *Facial Protection*

Surgical or procedure masks are required when handling and preparing medications in a biological safety cabinet; in this instance, they are worn to prevent microbial contamination of the sterile field.

Full-face protection should be worn whenever a risk of splashing is present (for example, during certain drug administration procedures). The use of a full face shield is preferred. If goggles are used, they have to be worn in conjunction with a fluid-resistant mask.

#### *Respiratory Protection Apparatus*

Fit-tested respirators such as those certified N95 or N100 by the U.S. National Institute for Occupational Health and Safety should be used when there is a risk that an airborne powder or aerosol will be generated.

#### *Cap*

Caps are required only in the sterile preparation room and are worn to prevent microbial contamination of the sterile field.

#### *Shoe Covers*

Disposable shoe covers are worn to prevent contamination of the health care workers' shoes, and covers should be worn when in the sterile

preparation room or in the event of a spill. Shoe covers should be removed immediately when leaving the sterile prep room to avoid contamination of other areas [27].

### **Safe chemotherapeutic drugs reconstitution**

Chemotherapeutic drug dilution is an important part of cancer chemotherapy. It should be carried out separately in a chemotherapeutic admixture unit and not in the wards because of the danger from spillage and contamination. Class II cabinets are the recommended safety cabinets for drug dilution under laminar flow. Class II cabinets are part-recirculation laminar airflow enclosures with HEPA filtration of exhaust air and an air barrier at the work opening. Separate fan/HEPA filter systems are provided for exhaust and laminar air flow. Chemotherapeutic drug safety cabinets are similar to class II cabinets in terms of operator and product protection. They also overcome the problem of protecting maintenance personnel by locating the exhaust filter under the work surface. They provide environmental and product protection.

All precautions must be taken to reduce direct contact whether through skin exposure, inhalation or ingestion. Adequate facilities for drug preparation are essential to reduce the risk of exposure. The following points are important:

1. Wear latex powder free long cuff gloves while preparing chemotherapy drugs. Wear a gown that is low or non-permeable, long sleeve, cuffed and solid fronted and use aerosols free mask.
2. Work over a suitable container to prevent the spread of any spillage.
3. Prevent high pressure being generated inside sealed vials - when fluids are introduced an equivalent volume of air should be withdrawn or a venting needle with a hydrophobic filter (to prevent aerosol formation) may be used if available.
4. Ampoules should be directed away from the face and covered with a suitable pad or cotton when broken open.
5. Diluent fluids should be introduced slowly into open-ended ampoules or vials, running it down the vessel wall and ensuring the drug powder is moist before shaking.
6. When excess air is expelled from a filled syringe it should be exhausted into a pad and not straight into the atmosphere.
7. If excess drug is to be expelled from a filled syringe it should be removed first and sterile

cotton wool placed over the end of the syringe to prevent possible scatter of aerosol droplets.

8. Luer lock fittings should be used on syringes, tubing and I.V. sets.
9. Label all prepared bottles (It is mandatory).
10. Admix all chemotherapeutic drug drugs in class II biological safety cabinet (laminar air flow) that meets standards and it is inspected appropriately.
11. Check the reconstitute or diluents for the particular drug and the concentration in which it is reconstituted.
12. The chemotherapeutic drug drug after reconstitution should be administered as soon as possible. Before reconstitution it should be stored at cold refrigerator temperature of 2-8°C (36°F-46°F) or controlled room temperature of 15-30°C (59-86°F) depending on the product. Protect from light. After reconstitution with the provided or appropriately selected diluents always store at cold refrigerator temperature of 2-8°C (36°F-46°F). Do not refrigerate the reconstituted product. The duration of stability after reconstitution varies with chemical composition of the compound but usually if stored at cold refrigerator temperature of 2-8°C (36°F-46°F) the reconstituted product is stable for at least 24h [28].

### Management of chemotherapeutic drug spillages

Chemotherapeutic drug spillage kits must be available and all staff working in areas where chemotherapeutic medication is administered must know where the chemotherapeutic drug spillage kit is located and how to use it.

- Restrict access to the spillage area.
- Inform other members of staff in the ward and inform a senior member of staff.
- New and expectant mothers should not have direct involvement in the management of a chemotherapeutic drug spillage.
- Turn off all fans.
- Open a spill kit.
- In case of contamination of protective clothing during the spillage, remove the contaminated items and put on fresh protective clothing from the spillage kit. Place all contaminated items in the designated chemotherapeutic waste bin.

- Follow the procedure as outlined in the spill kit [29].

### Care after accidental exposure

In case of accidental exposure of chemotherapeutic drug into contact with a worker's skin or clothing, it is strongly recommended that the worker should have immediately remove the contaminated clothing and thoroughly wash the skin of the affected area with soap and water and continue to rinse for 15 minutes. If appropriate, it is strongly recommended that the contaminated worker take a shower. It is strongly recommended that a deluge shower be made available in the oncology unit. It is strongly recommended that all contaminated clothing be discarded in chemotherapeutic waste.

If a chemotherapeutic drug comes into contact with a worker's eyes, it is strongly recommended that the worker flush their eyes at an eye wash station. Alternatively, it is recommended that the workers use an isotonic solution to flush their eyes (e.g., sterile NaCl 0.9%). It is strongly recommended that eyes be flushed for at least 15 minutes. It is strongly recommended that if contact lenses are worn, they should be removed immediately prior to flushing.

In the event of a needle stick or sharps injury, let the wound bleed freely. Under running water, gently and thoroughly wash the area with soap [30].

### Summary

During reviewing all articles it is found that there is a lack of guidelines related to safe handling of chemotherapeutic drugs in oncology units. In some hospitals these guidelines are updated in oncology units and there are fewer cases of health hazards related to occupational exposure of chemotherapeutic drugs. Availability of necessary equipments to fulfill all guidelines is necessary for the proper implementation of these guidelines. Regular monitoring of nursing personnel under these guidelines is also necessary. Knowledge has greater impact over good practices. So educating all nursing personnel who are handling chemotherapeutic drugs is of great importance. So it is conclude that proper education and monitoring of nursing personnel under safe handling of chemotherapeutic guidelines is necessary to prevent the health hazards related to exposure of chemotherapeutic drugs.

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### Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. *J Oral Pathol Med* 2006; 35: 540-7.

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More information about other reference types is available at [www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html), but observes some minor deviations (no full stop after journal title, no issue or date after volume, etc).

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